CERTIFICATE

I, Yow Ono,

of Shobayashi International Patent Office

do solemnly and sincerely declare that I am conversant with the English and Japanese languages and am a competent translator thereof, and that the attached document is, to the best of my knowledge and belief, a true and correct translation of the Japanese Patent Application No. 2001-028776 filed on February 5, 2001 in the name of Drip Absorption Mat.

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[NAME OF DOCUMENT] SPECIFICATION
[TITLE OF THE INVENTION] DRIP ABSORPTION MAT
[CLAIMS]

[Claim 1] A drip-absorption mat to be laid under a drip-oozing food comprising: an absorption sheet to absorb said drips and a porous surface sheet arranged over said absorption sheet and in contact with the food, wherein said drip absorption mat prevents color deterioration on the rear side of the food in contact with said porous surface sheet.

[Claim 2] A drip-absorption mat to be laid under a drip-oozing food comprising: an absorption sheet to absorb said drips and a porous surface sheet arranged over said absorption sheet and in contact with the food, wherein said absorption sheet is composed of a piece of non-woven fabric having thickness in the range from 0.3 mm to 3.0 mm.

[Claim 3] A drip-absorption mat to be laid under a drip-oozing food comprising: an absorption sheet to absorb said drips and a porous surface sheet arranged over said absorption sheet and in contact with the food, wherein a ventilation resistance value of said drip-absorption mat itself is less than 1.00 Kpa • s/m.

[Claim 4] A drip-absorption mat according to Claim 3, wherein a ventilation resistance value of said porous surface sheet is less than 0.20 Kpa • s/m.
the air flow resistance value of said drip-absorbing mat is less than 0.20 Kpa • s/m.

[Claim 5] A drip-absorption mat to be laid under a drip-oozing food comprising: an absorption sheet to absorb said drips and a porous surface sheet arranged over said absorption sheet and in contact with the food;

wherein said porous surface sheet comprises a film having convex and concavity forming minute undulations in the mountain-valley shape;

wherein a hollow cavity is formed in the convex portion and a pore is provided a the bottom of said concavity portion to form a minute aperture.

[Claim 6] A drip-absorption mat according to Claim 5, wherein said aperture is tapered with an opening of larger diameter on said side in contact with the food.

[Claim 7] A drip absorption mat according to Claim 5 or Claim 6, wherein said absorption sheet and said porous surface sheet are adhered with each other so as not to clog said apertures provided on said porous surface sheet.

[Claim 8] A drip absorption mat according to Claim 7, wherein said adhesion parts are dotty or linear.

[Claim 9] A drip absorption mat according to any of Claim 5 through Claim 8, wherein said film with fine undulations in the mountain-valley shape which composes said porous surface sheet shares less than 30% of the space occupied by said porous surface sheet as a whole.

[Claim 10] A drip absorption mat according to any of Claim 5 through Claim 9, wherein said apertures are present in 20 or more per 1 cm^2.

[Claim 11] A drip absorption mat according to any of Claim 1 through Claim 10, wherein said drip absorption mat is a tray mat to be laid on the mounting surface of a tray on which drip-oozing foods are placed.

[DETAILED DESCRIPTION OF THE INVENTION]

[0001]

[TECHNICAL FIELD OF THE INVENTION]

The present invention relates to a drip absorption mat laid under foods such as meat and fish which are apt to ooze drips, and more specifically to a drip absorption mat which prevents foods from color deterioration in contact with the drip absorption mat.

[0002]

[PRIOR ART]

In food counters in supermarkets or the like, foods such as meat and fish in a fixed amount are separately placed in a tray, packed in a transparent wrapping film, and displayed for sale. Under such sales conditions, foods are often left at standing on the display shelf for a long time so that drips are apt to accumulate in the tray, not only spoiling the appearance of foods but also causing the accelerated deterioration thereof. Therefore, in the tray on which drip-oozing foods such as meat and fish are mounted is usually underlaid a tray mat to absorb drips.

[0003]

Appropriately cut non-woven fabric as such has been conventionally used as a type of tray mat. However, in a tray mat comprising only a single layer of non-woven fabric, absorbed drips can be totally seen from the tray mat surface, spoiling the appearance of foods. In addition, as drips absorbed are in a state wherein they are directly in contact with foods, a tray mat of this type is not so effective in retarding the food deterioration.

[0004]

Therefore, to resolve these problems, there has been devised a type of tray mat comprising a non-woven fabric with a film having apertures pasted thereon.

Tray mat of such a type have been disclosed, for example, in Japanese Utility Model Application Laid-open Publication No. Hei 3-85886 and Japanese Patent Application Laid-open Publication No. Hei 9-86569. In such a tray mat, an opaque porous plastic sheet provided with numerous three-dimensional apertures is pasted on the surface of a liquid absorptive absorption sheet. According to the tray mat disclosed in these official gazettes, as the surface of absorption sheet is covered with a sheet provided with numerous apertures, drips absorbed into the absorption sheet are separated from foods so as not to be left also on the surface of tray mat. Accordingly, foods placed on the tray look good, and protected from the progressive deterioration caused by drips.

[0005]

[SUMMARY OF THE INVENTION]

However, in a tray mat described in the aforementioned official gazettes, the color deterioration of foods in contact with the mat has not been much taken into consideration. In the case where such a tray mat is used, there has been raised new problem that food browning (color deterioration of food) is in progress at the portion in contact with the tray mat (that is, the rear portion of foods). Even though the food browning occurs on the side invisible from outside, it results in giving consumers who have bought that food an unfavorable impression on the quality of said food.

[0006]

In this regard, according to the research by the present inventors, the color change of foods is caused by the alteration of myoglobin contained in meats, etc.

[0007]

That is, the color of meat such as beef and fish meat such as tuna is altered depending on the type and relative ratio of myoglobin derivatives present therein. Herein, as types of myoglobin derivatives, there exist the reduced type myoglobin (Fe^{2+}), oxymyoglobin (Fe^{2+}) and metmyoglobin (Fe^{3+}). The reduced type myoglobin is purple red, oxymyoglobin is scarlet, and metmyoglobin is brown. Freshness impression is given to consumers in the decreasing order of scarlet>purple red>brown.

[0008]

In this regard, the meat immediately after excision contains almost nothing but the reduced type myoglobin, appearing purple red. When this meat is left in the atmosphere, the reduced type myoglobin is coordinated with an oxygen molecule

to form oxymyoglobin, so that the meat becomes scarlet. When further left in the atmosphere, oxymyoglobin is oxidized to form metmyoglobin, so that the meat turns to brown.

[0009]

Herein, color deterioration of meats is caused by meat browning due to the formation of metmyoglobin as described above, and the progress of said formation is influenced by the oxygen partial pressure, temperature, humidity, pH, salt concentration, light, etc.

[0010]

However, present inventors' researches have revealed that, in comparison of the case where metmyoglobin is formed from the reduced type myoglobin via oxymyoglobin (reduced form myoglobin→oxymyoglobin→metmyoglobin) with the case where metmyoglobin is directly formed from the reduced type myoglobin not through oxymyoglobin (reduced form myoglobin→metmyoglobin), the former case can retard the meat color deterioration due to the formation of metmyoglobin, and that alteration process as in the former case can be secured by sufficient breathability provided in the drip absorption mat laid under meats.

[0011]

The present invention has been made in view of the above-described situations, aiming at providing a drip absorption mat capable of preventing foods (meats) from color deterioration on the side of foods such as meats in contact with said drip absorption mat when they are mounted thereon.

[0012]

[MEANS FOR SOLVING THE PROBLEMS]

A drip absorption mat according to the first invention of this application is a drip absorption mat to be placed under drip-oozing foods, comprising an absorption sheet to absorb said drips and a porous surface sheet arranged over said absorption sheet and in contact with foods, so composed that it prevents the color deterioration on the rear side of foods in contact with said porous surface sheet.

[0013]

With such a composition, a drip absorption mat is provided with breathability so as to be able to retard color deterioration of foods such as meats due to the metmyoglobin formation, thereby prevent foods such as meats from color deterioration on the side in contact with the mat.

[0014]

Thus, a drip absorption mat is obtained which is capable of preventing color deterioration of foods (meats) on the side in contact with the mat when foods such as meats are mounted thereon. Thus, a drip absorption mat according to this invention can be defined as a drip absorption mat for preventing foods (foods such as meats containing myoglobin, in particular) from color deterioration on the rear side of foods mounted thereon.

[0015]

And, a drip absorption mat according to the second invention of this application is a drip absorption mat laid under drip-oozing foods, comprised of a drip absorption sheet to absorb said drips and porous surface sheet arranged over said absorption sheet and in contact with foods, said absorption sheet being composed of non-woven fabric having the thickness in the range of 0.3 mm to 3.0 mm.

[0016]

With such a composition, in addition to achievement of functions and effects of the first invention, drip absorption by the absorption sheet can be efficiently performed owing to the thickness of said absorption sheet adjusted to from 0.3 mm to 3.0 mm, and at the same time bulkiness of mat can be avoided.

[0017]

That is, when said absorption sheet is less than 0.3 mm thick, the drip absorption capability thereof becomes insufficient, while, when the thickness exceeds 3.0 mm, the mat becomes bulky so as to be inconvenient for handling, in spite of the increase in its absorption capability. However, these problems are favorably solved in this invention so that a drip absorption mat capable of preventing the color deterioration of foods can be obtained.

[0018]

And a drip absorption mat according to the third invention of this application is a drip absorption mat laid under drip-oozing foods comprised of a drip absorption sheet to absorb said drips and a porous surface sheet arranged over said absorption sheet and in contact with foods, and so composed that the air-flow resistance (ventilation resistance) value of said drip absorption mat itself is less than 1.00 Kpa ·s/m.

[0019]

With such a composition, in addition to achievement of functions and effects of the first invention, breathability of the drip absorption mat itself is remarkably improved because of its air-flow resistance (ventilation resistance) being less than

1.00 Kpa·s/m, so that the color deterioration of foods such as meats on the side in contact with the mat can be more effectively prevented.

[0020]

And, a drip absorption mat according to the fourth invention of this application is so composed that, in the drip absorption mat according to the third invention, the air-flow resistance value of said porous surface sheet is less than 0.20 Kpa·s/m.

[0021]

With such a composition, breathability of said porous surface sheet is noticeably improved because of its air-flow resistance value being reduced to less than 1.00 Kpa·s/m, so that foods such as meats, etc. can be more effectively prevented from color deterioration on the side in contact with the mat.

[0022]

Furthermore, a drip absorption mat according to the fifth invention of this application is a drip absorption mat to be laid under drip-oozing foods, comprised of said absorption sheet to absorb said drips and a porous surface sheet which is arranged on the upper side of said absorption sheet and in contact with foods, wherein said porous surface sheet is composed of a film with convex and concavity shaped into minute undulations, wherein a hollow cavity is formed inside each of these convex portions, while each of said concavities is provided with a pore to form a minute aperture.

[0023]

With such a composition, in addition to achievement of functions and effects of the first invention, because of a minute aperture formed by providing a pore at the bottom of concavity of the film having minute undulations, the air inside the space within the convex portion can readily penetrate into the inside of the aperture (concavity) via the absorption sheet. Accordingly, breathability becomes remarkably improved compared with the case where air reaches the inside of aperture by penetrating through the absorption sheet, so that foods such as meats, etc. can be effectively prevented from color deterioration on the side in contact with the mat.

[0024]

And, a drip absorption mat according to the sixth invention of this application is so composed that, in the drip absorption mat according to the fifth invention, said apertures are tapered with the diameter thereof on the side in contact with foods

being enlarged.

[0025]

With such a composition, said apertures are in the form of so-called funnel toward foods, so that drips are readily guided to the drip absorption mat side through these apertures.

[0026]

And, a drip absorption mat according to the seventh invention of this application is so composed that, in a drip absorption mat according to the fifth or sixth invention, said absorption sheet and said porous surface sheet are adhered with each other so as not to clog said apertures provided on said porous surface sheet.

[0027]

With such a composition, said absorption sheet and said porous surface sheet are hardly separated so that the handling thereof such as transportation, etc. of drip absorption mats becomes easy.

[0028]

And a drip absorption mat according to the eighth invention of this application is so composed that, in the drip absorption mat according to the seventh invention, said adhesion sites are dotty or linear.

[0029]

With such a composition, a drip absorption mat easy to handle can be obtained with the adhesion area being minimized as much as possible without spoiling general features of the absorption sheet and porous surface sheet.

[0030]

Moreover, a drip absorption mat according to the ninth invention of this application is so composed that, in a drip absorption mat according to any of the fifth through the eighth inventions, said film with fine undulations comprising said porous surface sheet shares less than 30% of the space occupied by said porous surface sheet as a whole.

[0031]

With such a composition, a space excluding the film is increased to exceed a predetermined level in the entire space occupied by said porous surface sheet, so that the air within this space can be guided to the inside of the aperture so as to increase the air volume to be in contact with the surface of foods.

[0032]

Namely, a porous surface sheet composed of said film having fine undulations in the mountain-valley shape is comprised of a film itself and spaces formed by undulations. In this invention, as the space proportion becomes more than 70%, the air volume within spaces can be increased.

[0033]

Therefore, this arrangement can favorably prevent foods (meats) from color deterioration on the side in contact with the mat.

[0034]

In addition, this arrangement can not only efficiently reduce the material cost at the time of manufacturing said film but also improve the heat insulation capacity of mat owing to the air within undulations.

[0035]

And, a drip absorption mat according to the tenth invention of this application is so composed that, in the drip absorption mat according to any of the fifth through the ninth inventions, said apertures are arranged to be present at 20 or more per 1 cm^2.

[0036]

With such a composition, the ventilation resistance value of said porous surface sheet can be easily reduced.

[0037]

And, a drip absorption mat according to the eleventh invention of this application is so composed that, in said drip absorption mat according to any of the first through the tenth inventions, said drip absorption mat is a tray mat which is laid on the mounting surface of a tray on which drip-oozing foods are placed.

[0038]

With such a composition, color deterioration on the rear side of foods (meats) mounted on tray can be prevented.

[0039]

[EMBODIMENTS OF THE INVENTION]

In the following, one preferred embodiment of a drip absorption mat according to this invention used as a tray mat will be described with reference to the drawings. First, Figs. 1～4 are schematic diagrams showing the composition of a tray mat according to this embodiment: Fig. 1 is a plan view, Fig. 2 is a side view, Fig. 3 is a top plan perspective view of a porous surface sheet, and Fig. 4 is a perspective view of a partially peeled porous surface sheet.

[0040]

As shown in Figs. 1, 2 and 4, the tray mat 10 according to this embodiment is composed of the liquid-absorptive absorption sheet 11 laminated by the porous surface sheet (porous surface sheet component) 13.

[0041]

In this embodiment, the liquid-absorptive absorption sheet 11 is composed of a non-woven fabric, and capable of absorbing drips oozing from foods. On the other hand, the surface sheet 13 is made of a porous resin film. With such a tray mat 10 according to this embodiment, drips oozing out from foods are absorbed by the absorption sheet 11 through apertures 13a of the surface sheet 13. In this case, as the surface sheet 13 is in contact with meat only in little surface area, drips are not retained on the surface thereof so that meat placed on the tray mat 10 becomes completely separated from drips, thereby the progress of deterioration of foods caused by drips can be prevented.

[0042]

Furthermore, in the tray mat 10 according to this embodiment, the ventilation resistance value of the tray mat 10 itself is set to be less than 1.00 Kpa·s/m by adjusting the size and density of apertures 13a on the porous surface sheet 13 and the thickness of the absorption sheet 11. Therefore, when the tray mat 10 according to this embodiment is used, due to the excellent breathability thereof, the reduced type myoglobin contained in the meat placed on said tray mat is to convert to metmyoglobin via oxymyoglobin so as to retard the meat browning caused by the formation of metmyoglobin. As a result, the progress in meat browning on the site in contract with the tray mat can be sufficiently suppressed.

[0043]

Herein, to secure such an excellent breathability as described above, in the tray mat 10 according to this embodiment, the ventilation resistance value of the surface sheet 13 is set to be less than 0.20 Kpa·s/m. Furthermore, the thickness of the absorption sheet 11 formed from non-woven fabric is adjusted to be in the range of 0.3 mm to 3.0 mm, preferably 0.5 mm to 2.0 mm, more preferably 0.75 mm to 1.5 mm. In addition, in the tray mat 10 according to this embodiment, to secure the excellent breathability, the surface sheet 13 is so composed that the density of apertures 13a becomes more than 20/cm^2, and that it adheres to the absorption sheet 11 via the adhesion parts 14 scattered on the whole surface of the absorption sheet 11. In this embodiment, adhesion at the adhesion parts 14 is carried out with a hot

melt adhesive.

[0044]

Figs. 5~9 are to illustrate the function of tray mat 10 according to this embodiment in more detail.

[0045]

First, as shown in Fig. 5, the tray mat 10 according to this embodiment is formed by a partial adhesion of the porous surface sheet 13 provided with apertures 13a to the absorption sheet 11. In such a tray mat 10, the surface sheet 13 is composed of a film with fine undulations in the mountain-valley shape, wherein minute tapered apertures 13a are formed by providing a pore 12 at the concave bottom thereof.

[0046]

Therefore, the cross section of aperture 13a becomes tapered, and a hollow 13c is formed inside the convex 13b. This structural arrangement facilitates the weight reduction of the tray mat 10 as a whole and at the same time the easy penetration of air in the hollow 13c to the inside of the aperture 13a via the pore 12.

[0047]

In this embodiment, while the thickness F of a film composing the surface sheet 13 is 0.005 mm ~ 0.1 mm, the depth T of the aperture 13a is 0.02 mm ~ 1.0 mm, so that, in practice, this depth T is to represent the apparent thickness of the surface sheet 13, that is, 0.02 mm ~ 1.0 mm. Furthermore, in the space occupied by the surface sheet 13 (porous surface sheet) as a whole, the share of the film is preferably less than 30%, more preferably less than 10%.

[0048]

In addition, in this embodiment, the rib width R between the adjacent apertures 13a's is less than 1 mm, and, of the diameter of the aperture 13a, the aperture diameter Hb on the surface side in contact with the absorption sheet 11 is less than 2.0 mm, and the aperture diameter on the surface side in contact with foods is less than 5.0 mm.

[0049]

These parameters and parameters related to them will be described in detail as follows.

[0050]

First, as a surface sheet 13, a film provided with apertures is preferably used, and the aperture diameter thereof is less than 5.0 mm, more preferably in the range

of 0.1 ~ 2.0 mm. In this regard, when the aperture 13a is too large in size, drips absorbed from the aperture part into the absorption sheet 11 undesirably become visible. On the other hand, when the aperture is too small, it becomes difficult for drips to be absorbed into the absorption sheet 11 through the aperture 13a.

[0051]

The aperture diameter on the side in contact with foods is preferably larger than that on the side in contact with the absorption sheet 11. This arrangement not only facilitates the easy movement of drips to the absorption sheet 11 through the aperture 13a but also prevents drips from going backwards. Furthermore, small aperture diameter prevents drips therein from being visible from the surface.

[0052]

Density of apertures 13a is preferably more than 20/cm^2, more preferably more than 200/cm^2. The even arrangement of numerous apertures 13a enables meats to be evenly in contact with air.

[0053]

The aperture pitch "P" is preferably in the range of 0.1 ~ 2.0 mm, and the rib width "R" is preferably in the range of 0.01 ~ 2.0 mm, more preferably less than 1.0 mm in particular. The narrow rib width R enables the film surface in contact with meats to be reduced, so that meats can be more evenly in contact with air.

[0054]

A ratio of the aperture area to the surface area (aperture area ratio) in contact with foods is in the range of 30 ~ 99%, preferably 50 ~ 90%, and more preferably 60~80%, and that on the side in contact with the absorption sheet 11 is in the range of 1 ~ 60%, preferably 15 ~ 22%. In this case, as shown in Fig. 7, the aperture area ratio on the side in contact with foods is associated with a large aperture A (aperture diameter Ha), representing the "apparent aperture area ratio" in the case of overlooking the tray mat 10 (Fig. 9A). On the other hand, the aperture area ratio on the side in contact with the absorption sheet 11 is associated with a small aperture B (aperture diameter Hb), representing the "substantive aperture area ratio" (Fig. 9B). In this invention, the "substantive aperture area ratio" is set smaller than the "apparent aperture area ratio" (cf. Figs 9A and 9B).

[0055]

That is, the drip absorption mat according to the preferred embodiment of this invention is so arranged that the aperture formed on the side in contact with the absorption sheet 11 is smaller in size than that formed on the side in contact with

foods. Thus, the area of the tray mat in contact with meats becomes relatively small while the area of meats in contact with air becomes large, so that the color deterioration on the rear side of meats in contact with the mat is prevented in conjunction with the improved aeration.

[0056]

The resin composition of the film can be suitably selected from a group comprising synthetic resins of the polyolefine type such as polyethylene and polypropylene, the polyethylene type, filler resins, etc. To these resins may be added activators and pigments. For example, mixing of TiO_2 into resins makes the film opaque to improve the concealing ability thereof, so that the absorbed drips become hardly recognizable from the surface side.

[0057]

Materials composing the absorption sheet 11 can be suitably selected from a group comprising non-woven fabric such as air-laid non-woven fabric and thermal bond non-woven fabric, paper, urethane, etc. Specifically, the absorption sheet 11 can be composed of, in addition to those materials shown in the above-described embodiment, a bulky air-laid non-woven fabric having the "metsuke" 60 g/m^2 and the thickness of 1.1 mm. The metsuke and thickness of a fabric to be used may be determined in the ventilation resistance value of less than 1.00 Kpa·g/m in which the tray mat 10 is provided, so that drips oozing out from foods can be satisfactorily absorbed. As to the air-laid pulp, the metsuske thereof is preferably in the range of 10 ~ 120 g/m^2 and its thickness in the range of 0.3 ~ 3 mm, more preferably 0.5 ~ 2 mm.

[0058]

In this case, the surface sheet 13 and absorption sheet 11 can be adhered at areas 14 using methods suitably selectable by those skilled in the art such as the adhesion with adhesives, thermal adhesion, sonic adhesion, etc. In order not to ruin the absorption capability and breathability of the tray mat 10, the adhesion at areas 14 must be performed so as not to clog the aperture 13a on the surface sheet 13, the aperture 12 in particular (that is, the aperture B in Fig. 7) on the side in contact with the absorption sheet 11 (on the side in direct contact with the absorption sheet 11) without altering the substantive ratio of aperture areas prior to and after the adhesion. Specifically, the surface sheet 13 and absorption sheet 11 are adhered with each other by spraying a hot melt adhesive of 3.0 g/m^2. In this case, the hot melt adhesive may be arranged to be sprayed in less than 0.3 mm wide so as to avoid

the complete clogging of the apertures 14 on the absorption sheet 11 side of the surface sheet 13.

[0059]

The drip absorption mat according to this invention is not limited to the use thereof as a tray mat, and can be used as a drip absorption mat in general to be placed under foods apt to ooze drips.

[0060]

[EMBODIMENTS]

Immediately after test sample pieces were excised from the identical chunk of meat, chromaticity "a" thereof was measured. Next, test meat sample pieces were placed on the tray mats 10's, and the chromaticity "a" thereof on the surface side in contact with the tray mat 10 was measured 5, 24, 48, 96 and 144 hr later.

[0061]

In this case, the chromaticity "a" was measured using a chromatic colorimeter (Minolta, trade name "CR-300") according to the "D-O" method as defined in JIS Z8722. At the measurement, a sample to be measured was irradiated from every direction so that the reflecting light in the direction perpendicular to the sample to be measured was received. The measuring diameter was 8.0 mm, and chromaticity "a" value in the direction from red to green was used.

[0062]

Ventilation resistance values of films having the aperture area ratios shown in Table 1 were measured in each of experiments 1 ~ 4, and comparative examples 1 and 2. Respective films were used as the surface sheet 13s of the tray mat 10, and the color deterioration of meats were measured. The results are shown in the same table 1.

[0063]

The ventilation resistance value was measured using the Automatic Air-Permeability Tester (KatoTek, trade name "KES-FS-AP1"), wherein the tray mat 10 or surface sheet 13 was ventilated constantly with air at the flow rate of 4 $cc/cm^2 \cdot sec$ (area = $2\pi \times 10^{-4}\ m^2$), and then air was released and sucked out. Then, the pressure loss for the 3-sec exhaustion and 3-sec suction was measured using a semiconductor pressure difference gauge to obtain the integral value.

[0064]

[TABLE 1]

	Surface sheet	Absorption sheet	Aperture area ratio of surface sheet (%)		Ventilation resistance value (Kpa·s/m)	
			Substantive aperture area ratio	Apparent aperture area ratio	Surface sheet only	Absorption mat as a whole
Example 1	porous film	Air-laid pulp	23.8%	80.9%	0.0080	0.0810
Example 2	porous film	Air-laid pulp	19.4%	67.0%	0.0080	0.1090
Example 3	porous film	Air-laid pulp	15.2%	86.7%	0.0130	0.1000
Example 4	porous film	Air-laid pulp	19.8%	68.6%	0.0090	0.0910
Comparative example 1	Film having partial apertures	Air-laid pulp	1.4%	1.6%	0.4000	2.0800
Comparative example 2	Film having a partial incision	Air-laid pulp	0.0%	0.0%	25.5000	26.6300

Chromaticity level "a"						
Immediately after excision	5 hr later	24 hr later	48 hr later	96 hr later	144 hr later	good looking color after 144 hr
18.9	24.4	20.5	17.0	13.4	10.3	○
17.2	24.3	21.9	17.1	13.4	11.1	○
18.3	25.5	19.4	16.2	11.5	9.9	○
18.1	23.1	18.4	14.6	12.2	9,2	○
16.4	20.8	18.9	15.6	10.9	9,1	×
17.9	17.7	10.9	8.4	7.8	6.5	×

[0065]

Variations of the chromaticity level values "a" in Comparative Example 2 and Example 1 are shown in Fig. 10. As clearly understood from Table 1 and Fig. 10, an excellent coloring state of meats can be maintained relatively long in the case where the tray mat 10 according to this invention was used.

[0066]

[ADVANTAGES OF THE INVENTION]

As described above, according to this invention, a drip absorption mat can be obtained which can prevent foods such as meat from the color degradation on the surface side in contact with said mat when foods (meat) are placed thereon.

[BRIEF DESCRIPTION OF THE DRAWINGS]

[Figure 1] A schematic diagram showing the composition of a tray mat according to this embodiment, representing a plan view of said tray mat according to this embodiment.

[Figure 2] A schematic diagram showing the composition of a tray mat according to this embodiment, representing a side view of said tray mat according to this embodiment.

[Figure 3] A schematic diagram showing the composition of a tray mat according to this embodiment, representing a top plan view of a surface absorption sheet of said tray mat according to this embodiment.

[Figure 4] A schematic diagram showing the composition of a tray mat according to this embodiment, representing a diagonal perspective view of said tray mat according to this embodiment, the surface sheet of which is partially peeled.

[Figure 5] A schematic diagram for describing the function of the tray mat according to this embodiment in more detail, representing one process of manufacturing the tray mat by adhering a surface sheet to an absorption sheet.

[Figure 6] A schematic diagram for describing the function of the tray mat according to this embodiment in more detail, representing an enlarged cross section of a portion of the surface sheet.

[Figure 7] A schematic diagram for describing the function of the tray mat according to this embodiment in more detail, representing an enlarged perspective view for depicting the shape of an aperture in the surface sheet.

[Figure 8] A schematic diagram for describing the function of the tray mat according to this embodiment in more detail, representing an enlarged perspective view of an aperture, a part of which is scraped off to depict the shape of the aperture

in the surface sheet.

[Figure 9] A schematic diagram for describing the function of the tray mat according to this embodiment in more detail, representing a front view of a non-adhered surface sheet (Fig. 9A) and a rear view thereof (Fig. 9B).

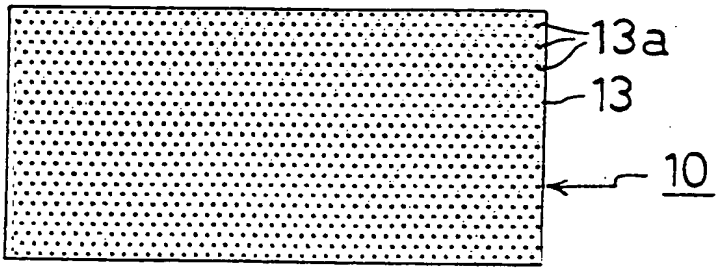
[Figure 10] A graphic representation showing variations of chromaticity levels "a" in Comparative example 2 and Example 4.

[DESCRIPTION OF THE SYMBOLS]

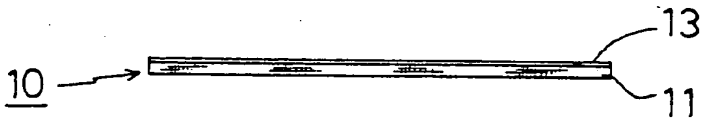
10 tray mat
11 absorption sheet
13 surface sheet (porous surface sheet)
13a aperture
14 adhesion part
13b convex
13c hollow cavity
F thickness of film composing the surface sheet 13
T depth of the aperture 13a, apparent thickness of the surface sheet 13
R rib width between apertures 13a
Hb aperture diameter on the side directly in contact with the absorbent .
Ha aperture diameter on the side directly in contact with foods.
P intervals between apertures
A large aperture, aperture according to an apparent area ratio of apertures to the area of surface sheet
B small aperture, aperture according to an essential ratio of area of apertures to the area of surface sheet

[NAME OF DOCUMENT] DRAWINGS

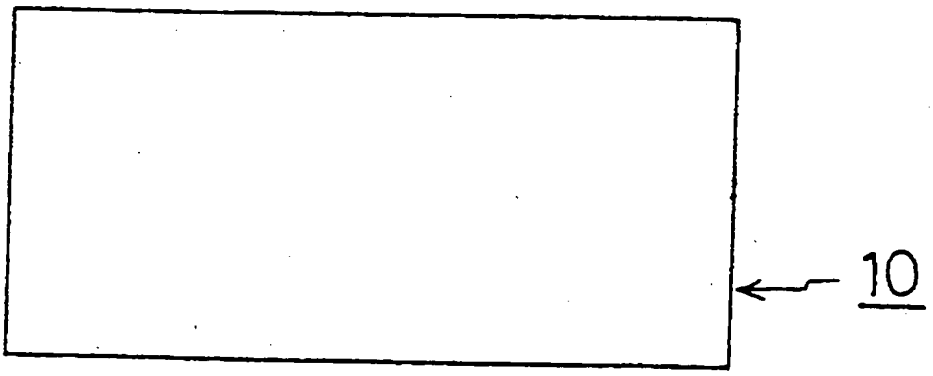
[Fig. 1]



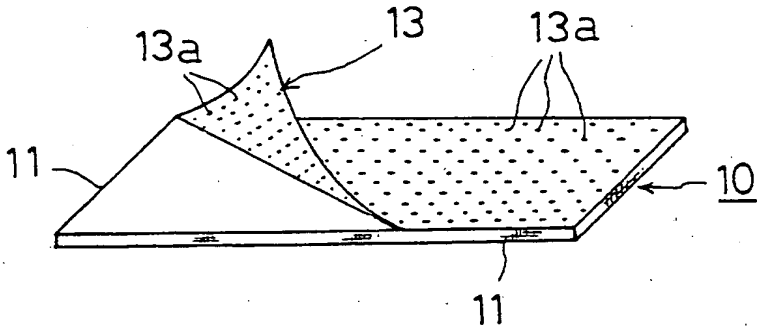
[Fig. 2]



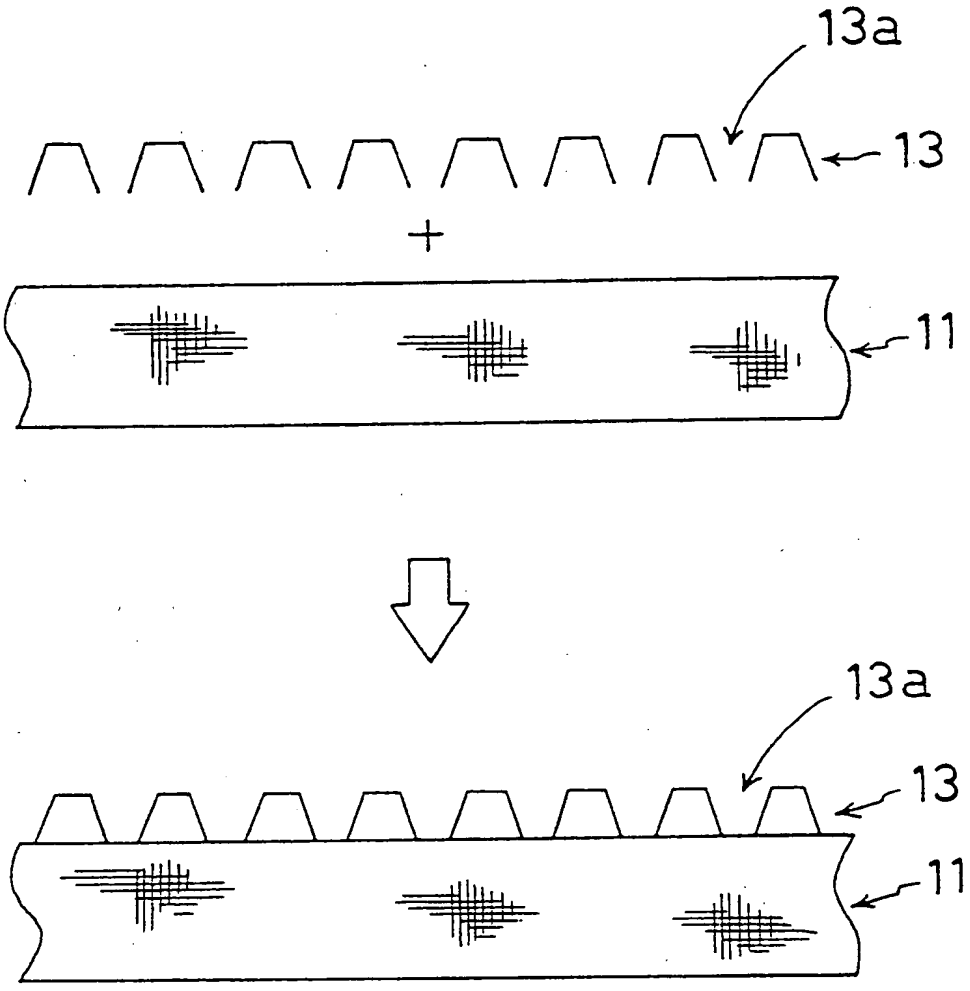
[Fig. 3]



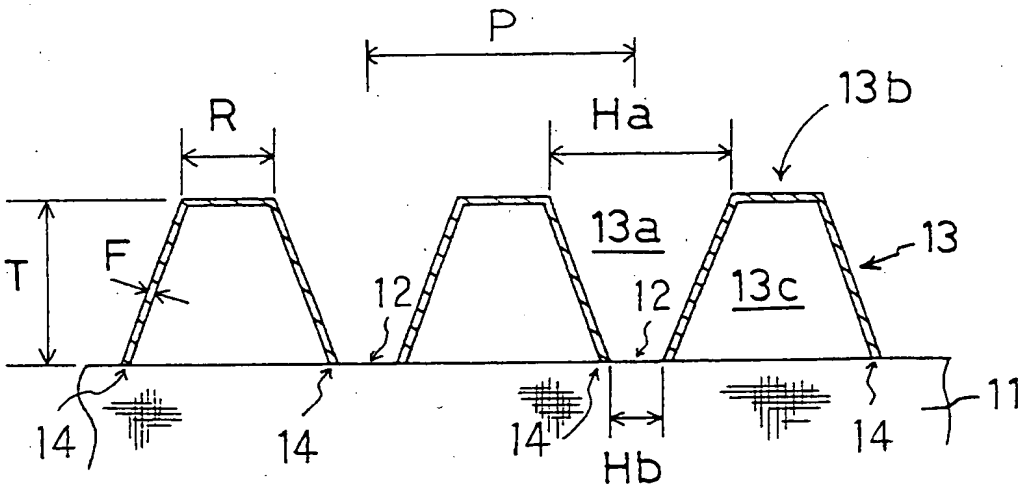
[Fig. 4]



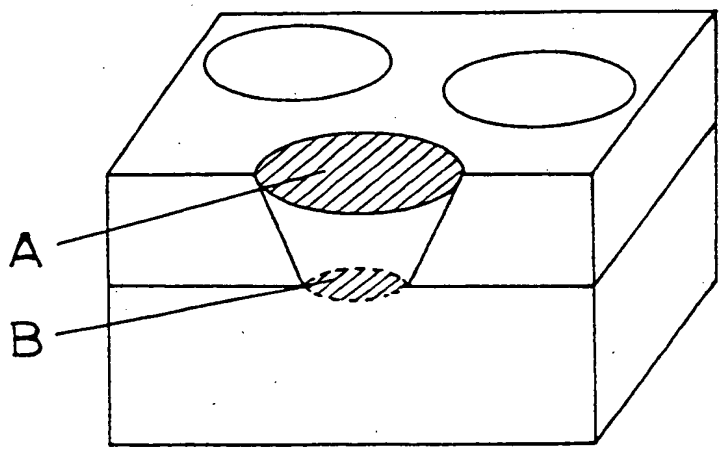
[Fig. 5]



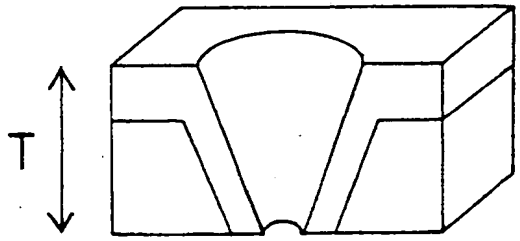
[Fig. 6]



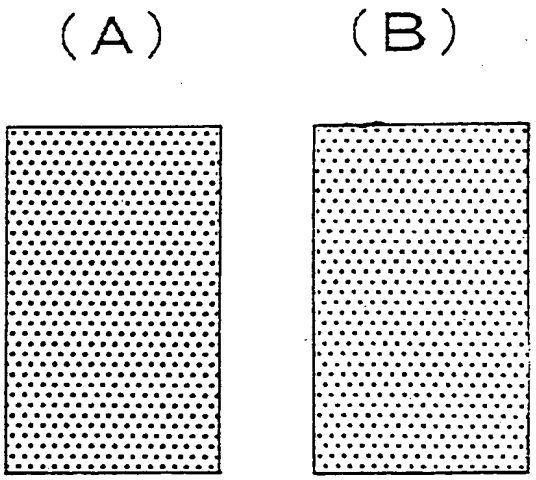
[Fig. 7]



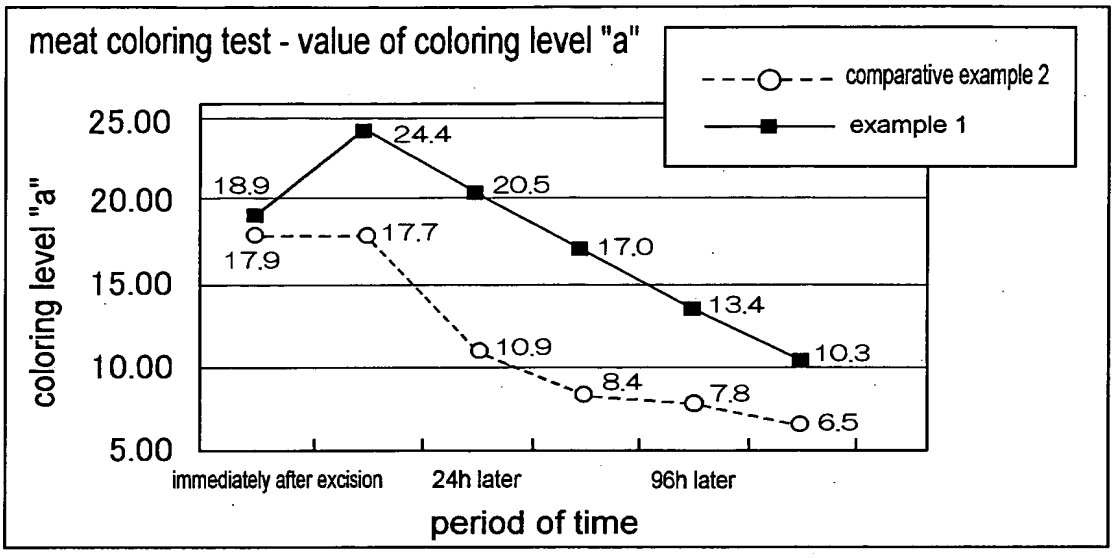
[Fig. 8]



[Fig. 9]



[Fig. 10]



[NAME OF DOCUMENT] ABSTRACT

[ABSTRACT]

[PROBLEM TO BE SOLVED] A drip absorption mat capable of preventing the color deterioration of foods such as meats on the side in contact with said mat when they are mounted thereon is provided.

[SOLUTION] The drip absorption mat 10 to be laid under a drip-oozing food is composed of the drip absorption sheet 11 and the porous surface sheet 13 which is arranged over said absorption sheet 11 and in contact with the food, so that color deterioration of meats on the side in contact with the drip absorption mat 10 is prevented by improving the breathability of the drip absorption mat 10.

[SELECTED DRAWING] Figure 4